

Payments Report

2021



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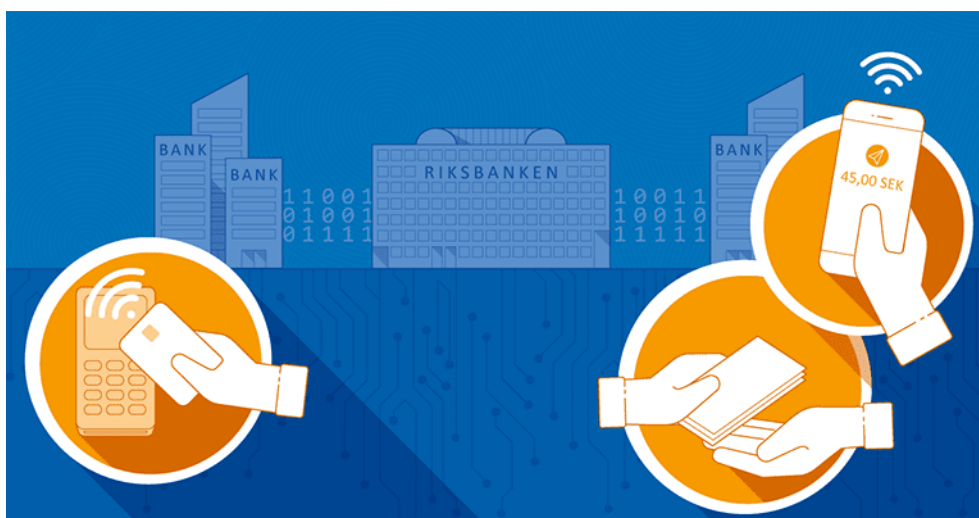
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Payments Report

The Payments Report describes and analyses developments on the payment market and the services offered by the Riksbank. It has been published annually since 2019 and was previously titled Payments in Sweden. The report summarises developments over the past year and presents the Riksbank's assessments and policy in the area. The aim is for the report to contribute to a knowledge-based debate and make it easier for external parties to monitor, understand and evaluate the Riksbank's policy on the payment market.

Payments Report 2021

The pandemic has given an extra boost to the digitalisation of the payment market. New actors offer fast and cheap payment solutions. At the same time, interest in crypto currencies is increasing. To meet this development, the Riksbank is investigating, in collaboration with other central banks and international organisations, the conditions for issuing a central bank digital currency. The Riksbank is also making preparations to allow instant payments, such as Swish, to be made using the Riksbank's system. It is the Riksbank's opinion that those who need to use cash should be able to continue to do so. To achieve this target, the position of cash as legal tender needs to be reinforced.



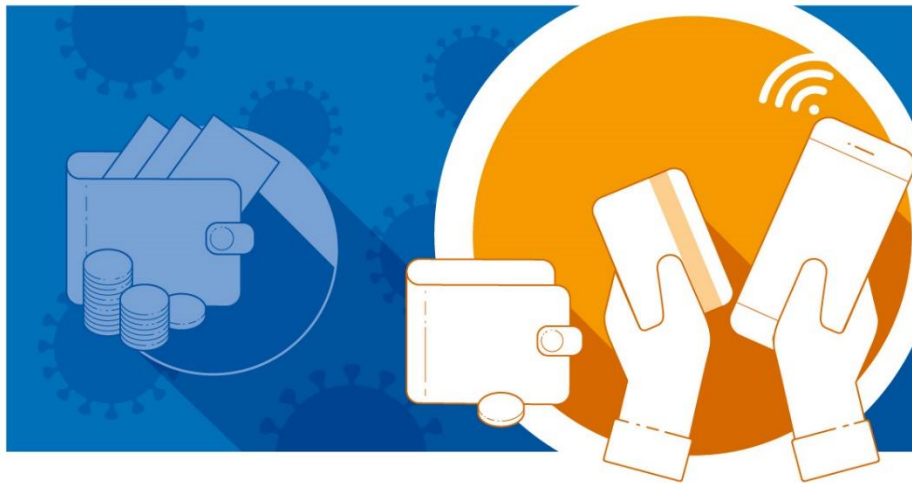
1 Trends on the payment market

Three trends dominate the payment market at present: Firstly, digitalisation of the payment market has received an extra boost from the pandemic. Secondly, interest in crypto currencies is increasing among the public, investors and payment service providers. Thirdly, major Nordic banks are working to create a joint Nordic infrastructure for payments.



1.1 Pandemic hastening development towards digital payments

During the coronavirus pandemic, the use of cash has declined in Sweden and in many other countries. Instead, contactless payments and other digital forms of payment have become more common. This is partly because we have shopped more online and tried to minimise points of contact when we go to physical shops. At the same time, new actors and new payment solutions are emerging.



Cash used less and less frequently in Sweden and abroad

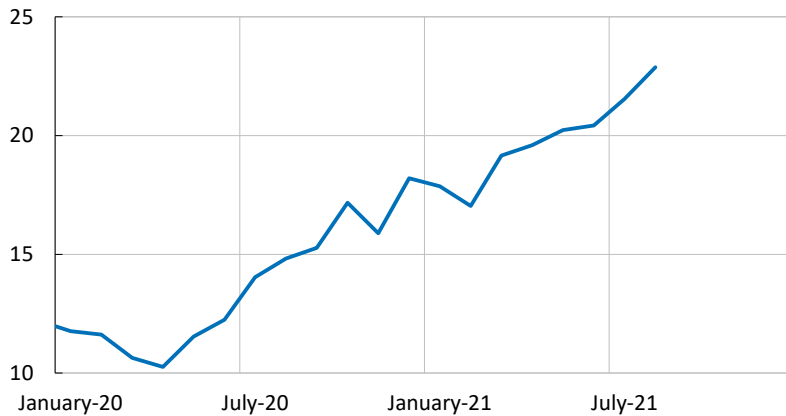
The use of cash has declined during the pandemic in favour of cards and digital payments. Sweden has had a low level of cash usage over several years, and the same trend is becoming increasingly clear in other countries, too. One important explanation for the faster pace of digitalisation could be that many people have needed to stay home because of the restrictions to prevent the spread of infection. This has led to a lot of commerce moving from physical shops to the internet. Another important explanation could be that consumers and business operators have been worried that the virus could be transmitted via banknotes and coins. This may have caused many to choose contactless payments such as cards and payment apps. The fact that the limit for having to use a pin for card payments was raised from SEK 200 to SEK 400 in 2020 has also contributed to more contactless payments.

Use of the payment application Swish has increased during the pandemic. The increase is greatest among older people who probably stayed at home more and have instead sent Swish payments to family and friends who have shopped for them. The recent increase in use of the Swish app is also due to an increasing number of retailers choosing to accept payment by Swish. This, together with the fact that more people are using contactless payments with cards or payment apps led to [contactless payments](#) accounting for almost 60 per cent of card payments last year.

At the same time, cash is used increasingly rarely. According to the Riksbank’s survey in 2020, only nine per cent of the population paid for their most recent purchase in cash (see [Cash is losing ground](#)). According to a [survey](#) by the Government Offices of Sweden, half of the Swedish population has reduced its use of cash over the past year, which is primarily due to digital alternatives being perceived as simple and efficient. During the same period, 40 per cent of Swedes have chosen to use the Swish app more often and these payments are increasing in commerce (see Chart 1). The reduced use of cash is also visible when we look at ATM withdrawals. During 2020, cash withdrawals [declined](#) by 20 per cent in Sweden. [This decline](#) has continued during the first half of 2021, but at a slower pace.

Chart 1. Increasingly common to pay using mobile phone

Number of payments Swish Handel, millions

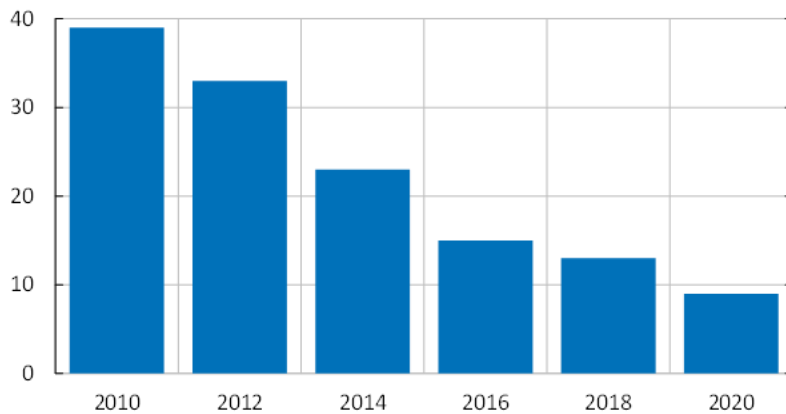


Note: Swish Handel covers transactions when private persons pay via Swish to larger companies through, for instance, a QR code or e-commerce.

Source: Getswish AB.

Chart 2. Cash used to a declining extent in Sweden

Percentage of people paying for their most recent purchase in cash



Source: The Riksbank.

In the euro area, use of cash has [declined](#) as a result of the pandemic, and in the United Kingdom, the number of cash payments fell by around 25 per cent in 2020. Contactless payments have increased to an equivalent extent in both regions. Similar trends are also visible in other countries, such as the United States, Australia and Canada. Despite cash being used more rarely in large parts of the world, a declining trend is not always visible in the statistics. This is because many people choose to save in cash, which means that the volume of cash in circulation has increased, despite actual use of cash declining. This phenomenon is known as the cash paradox (see *FACT BOX – The cash paradox*).

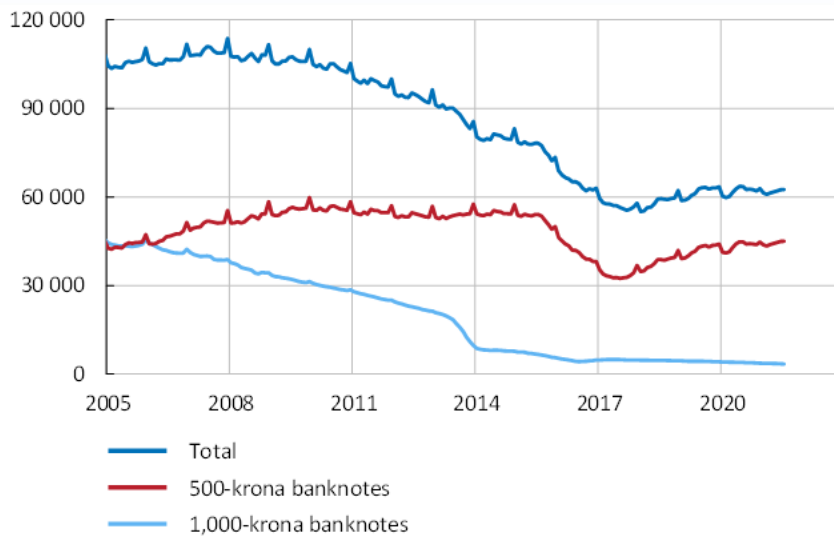
FACT BOX – The cash paradox

In several advanced economies, the demand for cash is increasing, at the same time as the percentage of payments in cash is declining in favour of cards and digital payments. This is a phenomenon known as the cash paradox. The paradox is explained by the general public wanting to keep cash as savings, especially in times of crisis. The paradox is visible in the statistics on the volume of cash in circulation, where the volume of cash in higher denominations, which are more suitable for savings, is increasing, while the volume of cash in smaller denominations is declining.

Sweden and Norway among others, deviate from this trend. Here, both the total volume of cash and the volume of cash in larger denominations have fallen (see Chart 3). The volume of 1,000-krona notes in circulation has been stable for a long time at a very low level. One possible explanation for this is that when the use of cash falls below a certain level, it becomes difficult to pay with it or use it at all. Cash then also becomes less attractive as savings. In other words, it may be less meaningful to save in an instrument one believes may be difficult to use in the future.

Chart 3. Cash in circulation has declined over time in Sweden

Banknotes and coins in circulation, SEK million



Source: The Riksbank.

New actors offer easy means of payment



In Sweden, several fintech companies have made it easier to shop online. For instance, Klarna offers solutions where one can pay via one's online bank or via an invoice when purchasing online. For those wanting to pay by card, it is often possible to register their card details with the retailer or a payment services provider, enabling purchases to be made at the touch of a button. There are also new companies offering rapid and simple cross-border payments, for instance, through digital wallets, where one can save, send and receive money on one's mobile phone.

In some parts of the world, large IT companies, known as bigtech, have a substantial influence on the payment market. This type of company can exploit their large, well-established networks of customers, often on social media platforms, which gives them a competitive edge on the payment market. In [China](#), for instance, two domestic bigtech companies, Alibaba and Tencent, already hold 94 per cent of the market for payments using mobile phones.

Bigtech companies in our part of the world, such as Apple and Google, offer payment solutions like Apple Pay and Google Pay, which are connected to the customer's usual payment card. These payment solutions make it possible to pay, for instance with a contactless payment using a mobilephone or a smart watch in a supermarket. Payment solutions where bigtech companies enable payments within an existing large digital network can grow very rapidly. The fact that Facebook, together with a group of companies is working on launching a digital currency called [Diem](#) has therefore attracted considerable attention in the media and among authorities and actors in the payment market.

The development by which bigtech companies become actors in the payment market has led to international discussions on the need for new regulation. Regulation should ensure consumer protection and confidence in the new digital services, but at the same time ought not to create unnecessary obstacles for innovative solutions and new actors. As the companies often have a large global range, international cooperation on regulation will be important. There is also concern among central banks that private companies with a global range can quickly enter the national payment market

with payment solutions based on another country's currency and compete with the national currency.

Digitalisation has raised the question of the state's role on the payment market

Technological advances, new actors and digitalisation of payments have brought to a head the question of the future role of the state in the payment market. One cannot rule out the possibility that cash will become irrelevant in Sweden, if private persons no longer use it and retailers choose not to accept it. Even if cash does not completely disappear, a situation in which cash is no longer generally accepted as a means of payment would be tantamount to a cashless society. If nothing is done to counteract this development, it will probably lead to the general public no longer having access to generally-accepted central bank money, that is, cash. The [Riksbank](#) has expressed concern over this potential development.

In December 2020, the Government appointed a [commission of inquiry](#) to make a broad survey of developments on the payment market and analyse the future role of the state. The remit of the inquiry included surveying how the payment market looks now and may look in the future, based on developments in Sweden and other countries. The inquiry is to examine whether the Riksbank needs to issue an e-krona, and to review the concept of the term legal tender in a world where cash is used less and less. The inquiry is also to survey the allocation of roles on the payment market between the state and the private sector and to take a stance on the future role of the state within payments. The inquiry is to present its report by 30 November 2022.

1.2 New opportunities and challenges with new forms of money

The interest in and number of so-called crypto currencies continue to increase. At the same time, the central banks are proceeding with the work on developing central bank digital currencies– what we in Sweden call the e-krona.



Crypto currencies are difficult to use as payment

In recent years, both the interest in and number of so-called crypto currencies has [increased](#). There are now many different crypto currencies that are designed in different ways. Bitcoin, Ethereum and Cardano are some of the most known. The Riksbank considers the term crypto assets to be more appropriate for these, as they are currently used more for speculation than as money. We have nevertheless chosen the more familiar term of crypto currency in this report, to avoid any confusion as to what we mean.

So how do crypto currencies differ from national currencies such as the Swedish krona? The most important difference is that crypto currencies lack the institutional and legal framework that national currencies have. For money to function as a means of payment, it has to be safe and generally accepted by, for instance, households and retailers. In Sweden, the Riksbank's inflation target, combined with stable banks and a safe and efficient financial infrastructure, create confidence in the krona. Sound public finances, well-balanced banking regulations with capital adequacy requirements, a deposit guarantee and consumer protection legislation all contribute to making the Swedish krona a well-functioning and stable currency. Crypto currencies have no state with this responsibility, and the price of a Bitcoin, for instance, varies substantially (see Chart 4).

Chart 4. Price of Bitcoin varies substantially over time

Price of Bitcoin in USD



Source: Macrobond.

Stablecoins follow the value of another type of asset

A sub-group to crypto currencies is known as stablecoins. Their value is tied to the value of other assets, such as one or more national currencies or other financial assets. The issuers of stablecoins claim that they hold a reserve of, for instance, a volume of US dollars, gold or government securities that can back up their value. The two largest stablecoins are Tether and USD Coin, which are both connected to the US dollar. In August 2021, the total [value](#) of stablecoins issued had grown to around USD 110 billion, from USD 60 billion in March 2021. However, these are still limited volumes in relation to the entire market for [crypto currencies](#). So far, stablecoins have largely been used as a bridge between national currencies and investments in other crypto currencies, rather than as a means of payment. The crypto currency [Diem](#), which a group of companies headed up by Facebook is planning to launch, is intended to be a stablecoin and differs from the current stablecoins in that its purpose is to create a global means of payment.

Despite stablecoins being constructed to be more stable, they can entail risks to financial stability, and the financial system as a whole, if they were used on a broad scale. Stablecoins have similarities to so-called money market funds, as the reserve for some stablecoins is largely invested in short-term assets, such as commercial paper (like a money market fund, but without complying with the same regulations and requirements that these funds observe). In times of financial crisis, it is common for market actors to move their holdings to safer assets and for the value of certain other assets to decline. If the assets in the reserves for stablecoins fall in value, this can lead to the issuers of stablecoins having liquidity problems. If this in turn leads to the demand for stablecoins declining, the issuers may need to sell assets quickly, which can lead to the price of the underlying assets falling even further and reinforcing a crisis that is already under way. If stablecoins based on another currency than the national one gain a footing in one country, for instance if a stablecoin backed by US dollars were used to a large extent in Sweden, this could also limit the country's potential to conduct national monetary policy and implement measures in the event of a financial crisis.

Crypto currencies lack consumer protection

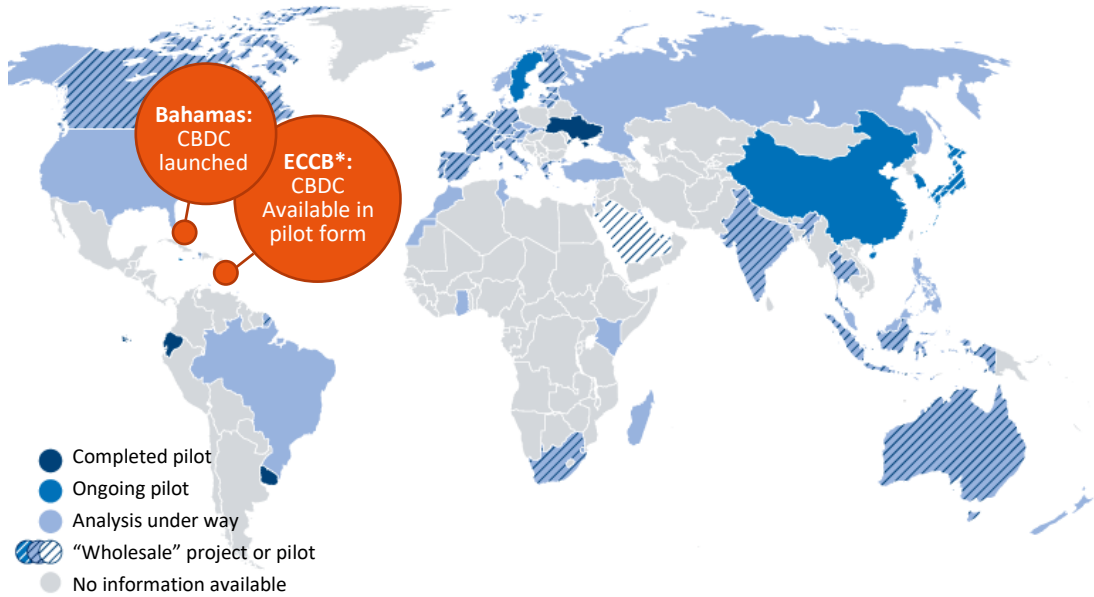
Crypto currencies largely lack the regulation with which traditional assets, such as equity and money market funds, comply and this means that they lack consumer protection and are therefore higher risk investments. In Sweden, [Finansinspektionen](#) has warned of the risks linked to trade in crypto currencies because of the inadequate consumer protection and that crypto currencies are difficult or impossible to value in a reliable way.

In September 2020, the European Commission presented a proposal for a regulation on markets for crypto currencies, the so-called [MiCA regulation](#), which is intended to regulate issuers and suppliers of services for crypto currencies. At present, crypto currencies are not covered by the EU regulations for financial services – apart from some of the regulations for combating money laundering and terrorist financing. The proposal, which can be expected to begin to apply in full some time during 2023/2024, contains increased requirements of suppliers of services linked to crypto currencies. One purpose is to reinforce consumer protection and reduce the risks of market abuse. The proposal also aims to manage the threats to financial stability and the national currencies that might arise if stablecoins were to become more common.

The first central bank digital currency has been launched

The Riksbank was one of the first central banks to take an interest in the possibility of issuing a central bank digital currency. Interest in this issue has grown rapidly in recent years, and now most central banks are investigating the possibility of central bank digital currencies. The Bahamas was the first to issue a central bank digital currency and a further few countries appear to be on the verge of an introduction.

Figure 1. Many countries investigating central bank digital currencies



*Eastern Caribbean Central Bank

Note: The ECCB has an ongoing pilot project that is available to all, and therefore classified as "live" by the BIS.

Source: Bank for International Settlements (BIS), 2021.

Increasing number of countries implementing technical tests

Many central banks are still doing a lot of work regarding analysis and research, but have also begun in recent years to test different types of technical solutions for central bank digital currencies. According to the Bank for International Settlements (BIS) most recent [survey](#) on central banks' ongoing work on central bank digital currencies, 60 per cent of the responding central banks are testing prototypes, what are known as proof of concept, while 14 per cent have taken a step further and are implementing pilot tests. The Riksbank is now implementing technical tests together with Accenture, to learn more about how a technical solution for an e-krona might look (see *Test of technical solution for an e-krona*).

1.3 International harmonisation affects Sweden

Payments in the euro area often function as smoothly as payments within Sweden's borders. Payments to other countries, however, may still be slow and expensive. To improve payments between countries, international work is under way on harmonising regulations and creating new joint standards for payment systems to be able to communicate with the same "language".



Need for faster and cheaper cross-border payments

By cross-border payments, we mean payments made between Sweden and other countries. This could be card payments when we are abroad, bank transfers to other countries when we make larger purchases or send gifts, and so-called remittances, when people in Sweden send money to relatives in other countries.

Sending money abroad is more complicated than making domestic payments. This is because it requires exchanging currency and involving banks and payment systems in more than one country. If payments are to be made quickly, the participants in the payment process need to be able to communicate with one another in an agreed format that is some form of common language, which is not always the case today (see *FACT BOX – ISO20022 – New standard for payment orders*). As a result of these complications, cross-border payments are often expensive, slow and intransparent (see *Are the payments efficient?*). For instance, an account transfer between a bank account in Sweden and an account in a bank outside the European Economic Area (EEA) often costs between five and 50 per cent of the sum transferred and often takes several days.

The problems with cross-border payments being slow and expensive has been pointed out by international organisations, the Riksbank and other central banks.

There are several international initiatives under way (see *The Riksbank is actively participating in the international cooperation*).

FACT BOX – ISO20022 – New standard for payment orders

Digital payments are based on communication between the parties involved in the payment – the systems must therefore communicate using the same ‘language’. All around the world, central banks, banks and financial infrastructures use the SWIFT network and its format and standard to make payments. SWIFT's earlier standard has limitations, for instance with regard to the volume of information that can be sent with a payment. In autumn 2020, SWIFT therefore presented a strategy and timetable for migrating to the format ISO20022.

The transition will begin in November 2022, when the Eurosystem and the ECB migrate to ISO20022. Worldwide, the transition is expected to proceed until 2025, which is SWIFT's final date for the old format and the old standard for international payments. The Riksbank's new settlement service for instant payments, RIX-INST, which comes into operation in May 2022, will be based on ISO20022 (see *RIX further developed to meet future needs*).

As ISO20022 is used internationally, it will open up for faster and more efficient processing of payments between countries and currencies. The new format, which includes more information, can moreover contribute to increased transparency and traceability for international payments.

Nordic harmonisation



Major changes are taking place in the infrastructure for payments. There is, for instance, a Nordic bank-wide initiative, [P27](#), which aims to build up a new Nordic payment infrastructure for clearing of payments in Nordic currencies and the euro. Bankgirot is currently the central hub used by Swedish banks to exchange and process

payment information, what is known as clearing. In the future, Bankgirot will be replaced by P27. Nordic Payments Council (NPC) has also been formed to produce and administer regulations and standards for payments between banks and payment institutions in the Nordic region. NPC is the Nordic equivalent of the European Payments Council (EPC), where bankers associations, banks and payment institutions in the Nordic countries are members.

NPC works to ensure that payments in the Nordic region look and function in accordance with European standards. This entails, for instance, a transition from national messaging standards for payments to the new ISO20022 standard. NPC works to ensure, for instance, that a so-called payment request for payments in Swedish or Danish krona should look and function the same as in the rest of the EU. This type of transaction involves the buyer approving the payment request sent by the seller and the transaction being executed. The idea is that this type of payment request can in the long run be used in the same way as the current direct debit and e-invoices within the Nordic countries.

The original timetable for the joint Nordic payment infrastructure has been delayed, but the objective is for the first transaction through P27 under the new regulations will be made some time in the second half of 2023. The transition to P27 and NPC's regulatory framework for format, and thereby a transition to ISO20022 for all payments in Sweden, will occur gradually up to 2025. The Swedish Bankers' Association coordinates the banks' transition to the new infrastructure and similar initiatives are under way in the other Nordic countries.

2 Safety and efficiency

Payments in Sweden are on the whole safe and efficient. Digitalisation has contributed to payments becoming faster and simpler, but also entails problems. For example, it has become more difficult to make payments at bank offices or via other agents. Swish and Bank-ID are also used as tools to conduct fraud.



2.1 Are payments in Sweden safe?

Payments in Sweden are relatively safe. Card fraud is declining substantially, thanks to new regulations with more stringent requirements for customers to identify themselves in connection with making a purchase. In addition, the number of false banknotes in circulation has declined during the first half of 2021, albeit from a high level. However, Swish and Bank-ID are also used as tools to conduct fraud. All in all, there have been few interruptions to the major payment systems in 2021.



What is needed for payments to be secure?

The Riksbank works to ensure that payments can be made safely and efficiently. By safely, we mean that money shall maintain its value over time and not be forged or used for fraud. Payment service providers and the payment system shall be covered by a clear regulatory framework and be resilient to shocks. There must also be several means of payment so that one can make payments even if one of the systems suffers disruptions.

Forged banknotes declining from historically high level

Even if the money and institutions that manage our payments are secure, there may be other risks linked to our payments and means of payment. For example, there is always a risk that cash will be stolen or counterfeited. However, from an international perspective, the new Swedish banknote series has a very high level of security with details that are very difficult to counterfeit.

The fact that there are nevertheless counterfeit banknotes in circulation is probably because fewer Swedes are using cash today and knowledge of how a genuine banknote looks has therefore declined among private persons and shop employees. It is

easy to see whether a banknote is genuine if you know what to look for. When you [examine a banknote](#), you should look at a combination of several security details, such as the security strip, the colour-shifting image, the watermark, the intaglio, the see-through picture, the security thread and the microtexts.

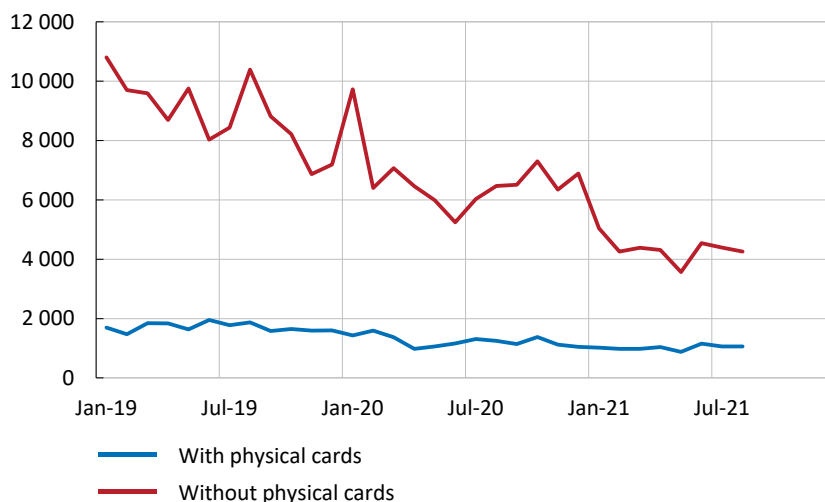
Historically, the volume of counterfeit banknotes in Sweden has been small, and has mainly involved larger denominations. But since autumn 2019, the number of counterfeit banknotes increased to a historically high level, to then fall once again in 2021. During 2019, 1,703 counterfeit notes were detected, and in 2020, 6,629 such notes were found. Most of the counterfeit banknotes are 500-krona notes. The counterfeits discovered so far have been of very low quality and attempts at imitating the security features on the banknotes have been highly unsophisticated or absent.

Downturn in number of card frauds

Paying by card is on the whole safe in Sweden, but sometimes card fraud occurs when a debit card or credit card is read during a payment or when withdrawing cash from an ATM. However, the number of card frauds in Sweden has declined. During the first half of 2021, the number of police reports regarding card fraud declined by 27 per cent, compared with the same period in the previous year. The greater part of the decline is due to the number of registered card frauds without the physical card, for instance in card purchases online, having declined by 28 per cent in relation to the same period in the previous year (see Chart 5).

Chart 5. Frauds without physical card declining

Number of card frauds with and without physical card



Note: Statistics refer to number of crimes reported.

Source: The Swedish Police Authority.

The decline can be explained by the EU requirement for ‘Strong Customer Authentication’, which began to apply in Sweden on 1 January 2021. This means, as a rule of principle, that a customer must provide identification using at least two of the following factors when making a digital payment or logging on to a payment account:

- knowledge (something that only the user knows, for example a password or a PIN code)
- a possession (something that only the user has, for example a card or a telephone)
- a unique characteristic (something that the user has, for example a fingerprint).

There are, however, a number of exceptions from the requirement for strengthened customer authorisation, among other things for low-value transactions and in contactless payments in shops.

New types of fraud increasingly common

As Swish and Bank-ID are used increasingly often they are also being used as tools to conduct fraud. They are used in combination with internet banks to access the victim's money. Telephone fraud, also known as vishing or voice phishing, has increased substantially over the past year. During the first half of 2021, the profits made by fraudsters are estimated to have increased by 186 per cent, compared with the same period in 2020. To [reduce the risk of fraud](#) it is important not to give out log-in details or passwords, especially not over the internet or by telephone.

Fraud crimes also often lead to money laundering through various procedures that sometimes involve Swish. Money from fraudulent activities is transferred from one account to another or several others through Swish payments, before the amount is withdrawn in cash, converted to crypto currency, or used to purchase expensive goods. This practice is known as layering, and is based on trying to create as many layers of transactions as possible to hide the origins of the money. Using front men, that is, people who allow someone else to use their accounts, is also common with regard to money laundering.

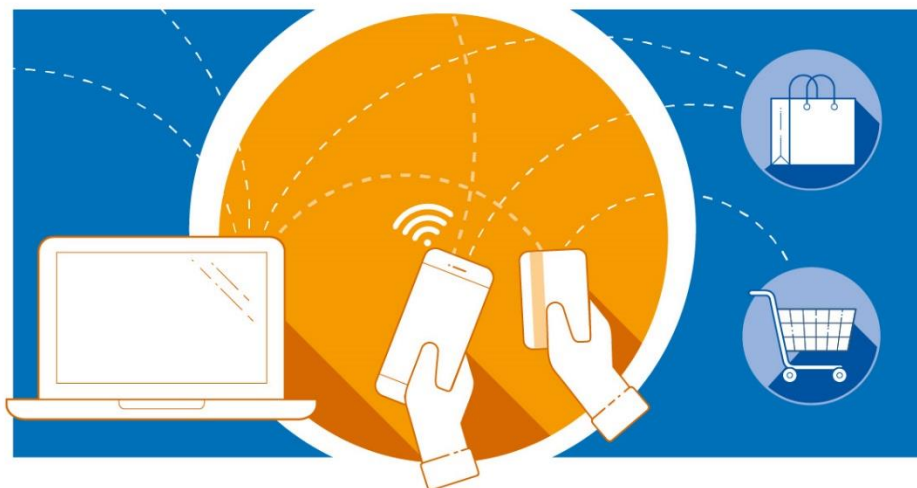
The national work on prevention of fraud and money laundering is constantly being reinforced. In June 2020, the police began a collaboration for sharing information with the five largest banks in Sweden. This collaboration, which is known as [SAMLIT](#) (Swedish Anti-Money Laundering Intelligence Task Force), has now become a part of the ordinary work on combating money laundering. In May 2021, a new crime classification was introduced, unlawful dealing with payment tools, which is to facilitate the work against frauds concerning other means of payment than cash.

High degree of security in the Swedish payment system

The Riksbank's central settlement system for large-value payments, RIX, and the clearing house, Bankgirot, are central hubs in the Swedish payment system. Disruptions and interruptions in either of these systems therefore affect the entire payment system and can result in one or more payment systems ceasing to function. During 2020 and the first three quarters of 2021, the technical systems have functioned well and availability has been very good. However, Swish has had more interruptions than the other systems. This is due, among other things to the underlying systems in Swish suffering a number of technical problems.

2.2 Are payments efficient?

Payments in Sweden are on the whole efficient. Digitalisation means that society's costs for payments fall, as digital means of payment are cheaper than payments in cash. However, this development is problematic for people who do not use digital payment methods. For instance, it has become more difficult to deposit and withdraw cash over the counter and receive help in paying bills. The competition on the payment market also needs to be improved by giving more types of company access to important payment systems.



What is needed for payments to be efficient?

The Riksbank works to ensure that payments can be made safely and efficiently. By efficiently, we mean that the costs to society, including energy consumption, for various methods of payment should be low. The payment should also be fast and simple, the users should have good access to payment services and there should be different means of payment to choose between, depending on the situation and conditions.

Digital means of payment are more cost-efficient

Payments are efficient if it costs relatively little for society as a whole to implement them. Society's costs include the payment intermediary's costs, such as costs for technical equipment, insurance, transportation, and also other costs such as waiting times for an individual customer. Society's costs also include the companies' costs for receiving payments, for instance, costs for cash tills and managing invoices.

The Riksbank's most recent [survey](#) of society's costs for various types of payment, which was published in 2012, shows that payments by card and direct debit are the most cost-efficient. For example, the overall costs to society for a payment using a

card was around SEK 4. The cost for a cash payment was twice as high, about SEK 8. According to a study by [Danmarks Nationalbank](#) published in 2019, payments with the Danish equivalent of Swish are particularly efficient for payments between private persons. The cost to society for this type of payment is around DKK 2.

Riksbank implementing a cost study

The Riksbank is now working on a new cost study aimed at measuring society’s costs for various types of payment in Sweden. The results of the study are important to enable us to evaluate how efficient Swedish payments are and how they relate to those in other countries. The Riksbank will collect data from households, companies, the public sector, banks and other payment service providers. The cost study will be published at the end of 2022 or early 2023.

Energy consumption high for some means of payment

One cost to society that has received considerable attention recently is the energy consumption for different means of payment. It is above all the extreme use of resources for Bitcoin that has been in focus. [The University of Cambridge](#) estimates that Bitcoin’s energy consumption in 2019 was around 67 TWh. This is on a level with the annual energy consumption in countries such as Austria and Colombia.

According to a report from [Deutsche Bank](#), the energy consumption per transaction for Bitcoin is high in comparison with other means of payment, for instance card payments (see Table 1). An individual Bitcoin transaction generates the same [carbon dioxide emission](#) as one person’s aircraft journey across Europe. On the other hand, transactions using the crypto currency Ripple have a very low energy consumption, which shows that the high energy consumption for Bitcoin does not necessarily apply to all crypto currencies. The report also shows that energy consumption for card payments is lower than for cash.

Table 1. Bitcoin requires a lot of energy in relation to card payments

Payment methods	KWh per transaction
Ripple	0.00001133
Visa (USD)	0.00649
MasterCard (USD)	0.00649
Cash (printed euro banknote)	0.08
Ethereum	20.294
Bitcoin	118

Source: Deutsche Bank, 2021

Cross-border payments need to be faster and cheaper

Speed and ease of use are important for payments to be efficient. Apart from instant payments like Swish, payments between Sweden and the euro area generally function as smoothly as payments within Sweden. Payments to other countries, however, are often slow and expensive.

The internet, digitalisation and new joint standards have contributed to decreasing the actual costs for sending money abroad. Moreover, competition has probably improved as new institutions have begun to offer faster and cheaper payments. There are now more services where the consumer can simply compare the costs of different payment alternatives (see, for instance, [Konsumenternas](#), [Money from Sweden](#) and [Monito](#)).

Challengers on the market for cross-border payments

Sending money within Europe is much faster and cheaper than payments to other countries. If, for instance, one wants to send money via one's Swedish bank to a bank account in Mexico, it is not unusual for it to take two days. The reason is that the Swedish banks do not have direct access to those countries' payment infrastructures. The Swedish bank must then rely upon a network of bilateral agreements between banks in different countries, known as correspondent banks. These agreements are usually based on one bank (the correspondent) holding deposits owned by another bank (the respondent) and performing payments and other services on behalf of the respondent bank. It can also become expensive with the exchange rate mark-up and fees.

In recent years, new payment institutions have begun to offer fast and cheap services for cross-border payments. This is possible when the institution is active in both the sender's and the recipient's countries. Each individual payment can be managed by the institution increasing its balance in the sender country's currency and reducing its balance in the recipient country's currency. This means that the institution does not need to move liquidity and use the correspondent bank system for each individual payment, and the payment can therefore be made quickly. Often the institutions can also match the customers' payments in various currencies, for instance, matching payments in Swedish krona-Mexican peso with payments in Mexican peso-Swedish krona, so that the total volume of liquidity needed to be moved between the different currencies is less.

Usually, cross-border payments are strongly dependent on the individual countries' domestic payment systems. As the domestic payment systems have been upgraded and become faster in several countries, cross-border payments have also become faster and cheaper (see, for instance, *RIX further developed to meet future needs*).

Poorer access to cash at bank offices

In Sweden, the [county administrative boards](#) have the task of ensuring that the possibility to use basic payment services corresponds to the needs of society. Their [assessment](#) is that access to basic payment services for private persons is in general satisfactory. This is mainly because many people can and want to use digital payment services. However, elderly people, those born abroad, and persons with functional variations experience greater difficulty making payments. For instance, it is [expensive to get help to pay bills at a bank branch](#). It can cost up to SEK 150 per bill, and be even more expensive if you are not a customer of the bank. Moreover, it may be difficult to find a bank office that still accepts cash for those who want to pay their bills in cash.

The banks have been given a clearer responsibility for cash management

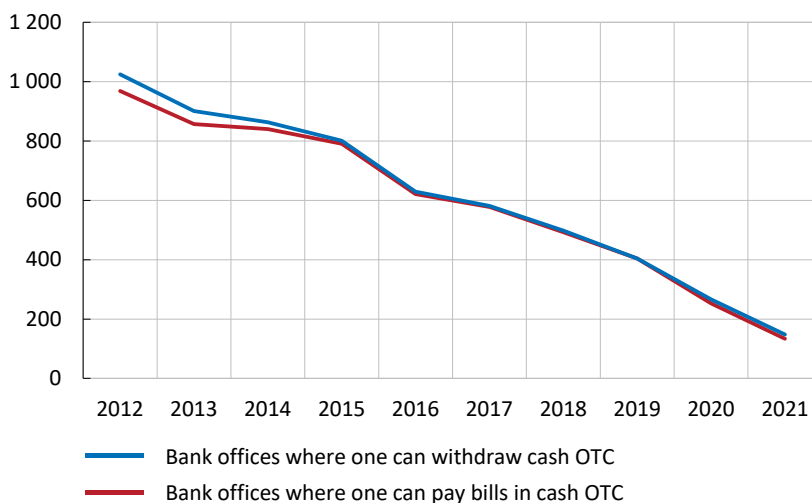
As of January this year, some of the larger banks are obliged to offer cash services for withdrawals and deposits. The purpose of the [legislation](#) is to slow down the development towards a cashless society. A minimum level is determined here with regard to the number of places in the country where one can withdraw cash and deposit daily takings, and large banks are responsible for meeting this level. In autumn 2020, Bankomat made twelve new establishments in areas that previously lacked an ATM, to comply with the new legislation’s requirement for accessibility. In total, the number of ATMs in Sweden is largely unchanged in relation to 2020.

Some risk exclusion when manual cash management disappears

The access to manual cash services, that is, the possibility to deposit and withdraw cash over the counter and to receive help paying bills, has continued to decline in 2021 as the banks have continued closing down offices (see Chart 6). At present, Handelsbanken is the only major bank offering cash services, at six bank branches. The savings banks are continuing to offer this type of service at their branches. The savings banks offer the possibility to withdraw cash over-the-counter at 140 branches, and the possibility to pay bills in cash over-the-counter at 128 branches.

Chart 6. Bank offices with cash have declined drastically in recent years

Number of bank offices with cash



Note: Forex Bank sold its deposit and lending operations to ICA Banken in May 2021, and will keep its banking license until year-end and will thereafter apply for a payment institution license. This affects their supply of cash services. Forex bank branches have therefore not been included in the chart for 2021.

Sources: Handelsbanken and Swedish Agency for Economic and Regional Growth Pupos Serviceanalys.

Manual cash services fulfil important functions that cannot be replaced by the automatic services the banks currently offer through Bankomat ATMs. This applies in particular to withdrawals and deposits of larger sums, deposits of coins, help in paying

bills over the counter and secure places for withdrawals. As there is no legislative protection for these services, they risk gradually disappearing altogether. This means that groups in society that for various reasons need to use manual cash services to manage their finances, will find it increasingly difficult to do so.

Right to payment accounts with basic features

Access to payment accounts and payment services is a necessity to manage one's finances. Consumers need to be able to receive transfers, for instance, salary or study support, and to be able to make transfers of their own and execute payments, such as paying their rent and their electricity bills. They also need bank cards, to be able to buy things in shops in a society that is increasingly abandoning cash, or to be able to withdraw cash from ATMs. Within the EU, the Payment Accounts Directive gives all consumers who are legally resident in the European Economic Area (EEA) the right to open a payment account with basic functions.

[Finansinspektionen](#) notes that the banks have on the whole introduced routines to live up to the requirements in the payment services directive regarding the right to payment accounts and are aware of their obligations under the directive. At the same time, there are indications of shortcomings in the application of the regulations. Complaints from consumers show, for instance, that banks sometimes deny consumers payment accounts because the customer lacks a personal identity number or Swedish ID documentation, that a credit assessment has been made or that the bank does not accept passports from countries that are a part of the EEA. A large number of the refusals are made with reference to the anti-money laundering regulations and their far-reaching requirements regarding identification and KYC. Finansinspektionen considers that in a future review of the Payment Accounts Directive, it will be important to clarify how the regulation relates to the anti-money laundering regulation to make it easier to apply the regulations.

Future legal requirement improves accessibility for people with disabilities

In April 2019, the European Parliament and the Council issued a directive with an accessibility requirement for products and services, what is known as the accessibility directive. This means, for instance, that bank services, including ATMs and card readers, shall be more accessible to people with functional variations or disabilities. A public [inquiry](#) has investigated how the directive can be implemented in Sweden, and proposes that the Riksdag shall require that the products and services covered by the directive can be perceived with more than one sense. Texts and other visual information shown in the products or services must also be easy for the intended target groups to understand. The inquiry proposes that the legislative amendments enter into force in June 2025.

Infrastructure for cash becoming increasingly vulnerable

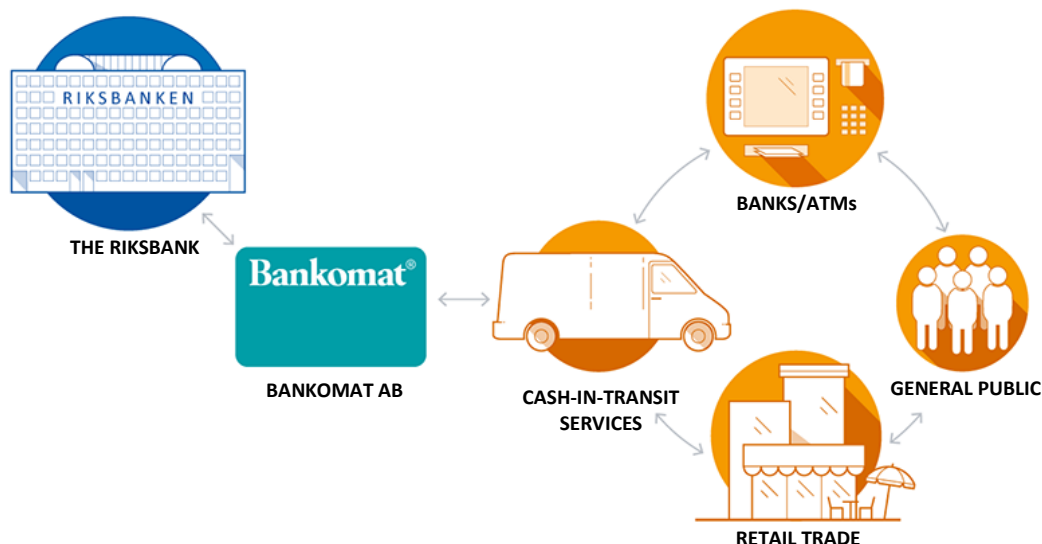
The use of cash is now so low in Sweden that it is beginning to be difficult to maintain the underlying infrastructure needed for households, banks and retailers to be able to obtain cash. An increasing number of Swedes are choosing to pay digitally (see Cash used less and less frequently in Sweden and abroad), but at the same time there are

groups who need to use cash to be able to manage their payments. Moreover, it is important that we can use cash as a back-up alternative if the electricity grid or internet are not working. [MSB](#), the Swedish Civil Contingencies Agency, encourages private persons to have a sum of cash in low denominations at home, so that they can manage in the event of a longer disruption in the payment system.

However, it is important to remember that cash management is also dependent on, for instance, electricity, telecommunications, transport and personnel, which means that cash management would also be affected by disruptions to these functions. The only cash one can be sure of having access to in a disruption is what one has at home in one's own crisis box. Moreover, cash can only replace some types of payment needed by society, for instance, payments to retailers and private persons. Cash is not a possible contingency plan for large electronic payment flows, for instance, salary payments, pension payments and payments of invoices.

Being able to use cash requires an underlying infrastructure that is dependent on co-operation between public authorities and private actors. The infrastructure is based on the Riksbank issuing new cash and destroying worn out cash, on the banks giving the general public access to cash and on the cash-in-transit companies ensuring it is transported and counted (see Figure 2).

Figure 2. Infrastructure for cash based on collaboration between private and public sector



There are several fixed costs in maintaining the infrastructure for cash. To enable the private actors in the distribution of cash to cover the fixed costs, they must raise the prices of their services in line with the decline in the use of cash. This in turn means it becomes less profitable for shops to accept cash.

As of 2020, Loomis is the only nationwide cash-in-transit company on the Swedish market. Unlike the banks, Loomis has no obligation to continue to provide its services.

As the distribution of cash is dependent on the existence of cash-in-transit companies, the infrastructure is very sensitive to changes in Loomis' operations.

Important to promote competition on the payment market

For payments to be efficient, it is important that there is sound competition between the actors offering payment services. Over the last decade, a number of fintech companies have become established on the payment market in Sweden. They use new digital technology and often challenge the established actors and structures. Several of the companies have introduced new, convenient ways of paying and have thus helped make payments in Sweden easier and safer (see *New actors offer easy means of payment*) However, the [fintech companies](#) are experiencing difficulties in obtaining access to important infrastructure necessary for offering payment services. For instance, the major banks govern which companies may use Bank-ID and Swish. Moreover, the fintech companies are experiencing difficulty gaining access to company accounts with the banks, which is a necessary condition to apply for authorisation as a payment institution.

A further problem for this type of actor is that they cannot be participants in the Riksbank's RIX settlement system. The question of who has access to the Riksbank's RIX settlement system is regulated in EU law, in the so-called Finality Directive, for instance. EU member states have implemented the directive in different ways, and only a few member states, including Hungary, currently allow fintech companies such as payment institutions and e-money institutions to be direct participants in their settlement systems. This means that clarification is needed so that the directive is applied in the same way throughout the EU. The European Commission therefore began a review of the Finality Directive at the end of 2020. This could lead to payment institutions and e-money institutions also being allowed to be direct participants in the payment system. The Commission has not yet presented any legislative proposals.

The EU's Second payment services directive (PSD2) aims to promote competition on the payment market. In connection with PSD2, two new payment services were introduced, in the form of payment initiation services and account information services that can be offered by fintech companies and other actors that are not banks. Payment initiation services mean that an actor, such as Trustly, can initiate a payment on behalf of a payer from the payer's bank account. Account information services entail an actor being able to gather account information about a customer. PSD2 was implemented in Swedish law in May 2018, but [fintech companies](#) still perceive that it can be difficult to connect to the bank's systems via so-called digital interfaces without any problems. Finansinspektionen published a clarification in January 2021 as to what obligations apply when companies gather information on bank customer's payment accounts via [digital interfaces](#). The European Commission intends to carry out a review of PSD2 during the fourth quarter of 2021, and if necessary to amend the legislation.

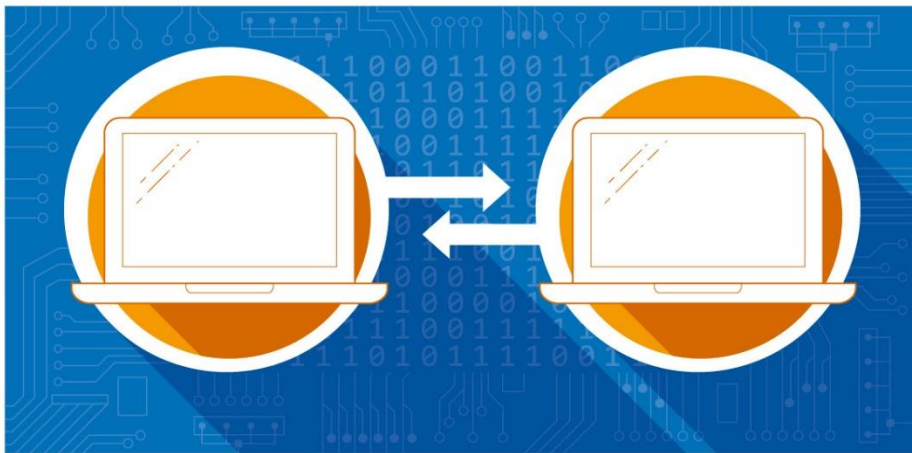
3 The Riksbank's work and policy

The Riksbank is responsible for payments in Sweden being safe and efficient. To meet future needs, the Riksbank's system for large-value payments is now being further developed. The Riksbank is taking an even greater responsibility for the logistics for cash and implementing technical tests for a potential e-krona. The Riksbank is also taking part in the international cooperation on the issue of central bank digital currencies and cross-border payments.



3.1 RIX further developed to meet future needs

The Riksbank settles the banks' and other financial institutions' payments to one another and the aim is to do this as smoothly and efficiently as possible. It is also important for the Riksbank to offer a central payment system that can meet new needs. As instant payments, such as Swish, will become increasingly important in the future, the Riksbank needs to offer a system that makes this type of payment possible on a large scale. The Riksbank's ambition is for cross-border payments to be as safe and efficient as domestic payments.



RIX is the Riksbank's payment system, in which credit institutions, clearing organisations, the Riksbank and the Swedish National Debt Office make large-value payments to one another, so-called settlement. Almost all electronic payments in Swedish krona that go from one bank to another pass through RIX. It is therefore essential to the efficiency and safety of the payment system and for financial stability that RIX functions and meets the requirements of the market.

One system with two services – RIX-RTGS and RIX-INST

The current RIX consists of a software and an IT platform where the software is run. The system is from 2009 and works well. The agreement the Riksbank has with the software provider expires in 2025, and the Riksbank is therefore investigating how RIX should look in the future, what services should be offered and how the system should be run.

One important decision has already been taken – the future RIX shall offer two services. One service will be called RIX-RTGS and is intended to replace the current RIX. The other service will be called RIX-INST, where INST stands for instant. At present, instant payments are only available via Swish. The purpose of RIX-INST is to offer a system for the settlement of instant payments in central bank money that Swish and

other new services can use (see *FACT BOX – How does RIX-RTGS differ from RIX-INST?*). Instant payments can increase efficiency and reduce the costs in payments for society as a whole, partly because they remove costly stages in the payment process. Settlement in central bank money also reduces the risks in the financial system.

FACT BOX – How does RIX-RTGS differ from RIX-INST?

When a bank customer wants to pay a customer of another bank, for instance an electricity bill, or to make a salary payment, this payment is merged with many other payments, known as clearing, and implemented as one large payment in RIX-RTGS. There are established routines and timetables for this, and this is why a payment often does not reach the recipient until the following day. In RIX-INST, on the other hand, the bank can enter the customer's payment separately without merging it with other payment and this means it can be executed immediately. RIX-INST therefore needs to be able to manage a lot more payments than RIX-RTGS, and therefore needs to have some other functions.

The Riksbank intends to use the Eurosystem's payment platform

RIX-INST will be launched in May 2022, and the Riksbank has signed an agreement on using the Eurosystem's platform for instant payments, known as TIPS (Target Instant Payment Settlement), for the system. Using TIPS as a platform supports the ongoing harmonisation of the Nordic payment markets towards a common European standard (see *Nordic harmonisation*). It is also an advantage that the Riksbank can share the costs with the Eurosystem. A further possible advantage is that payments to and from the eurozone can be faster, simpler and cheaper when the Swedish krona and the euro are available on the same technical platform. The Riksbank and the ECB began investigating the possibility of this type of solution in the autumn of 2020, and in June 2021 the ECB [confirmed](#) that the TIPS platform can be used for cross-currency payments. [Danmarks Nationalbank](#) will also join TIPS, which opens up opportunities for payments in Danish krone. At present, however, there is no function activated for being able to make cross-currency payments on the TIPS platform.

In September 2021, the Riksbank took a [strategic decision](#) to use the Eurosystem's platform for settlement of payments, which is known as T2, for large-value payments in Swedish krona. The Riksbank thus intends to replace the current IT platform for RIX with T2 and to investigate the opportunities for this. The decision is partly based on the fact that the payment market is becoming increasingly global. For example, banks are active in several countries, which means that the requirements for harmonisation and joint standards increase. The Riksbank has also taken a strategic decision to join the Eurosystem's platform for securities settlement, known as T2S.

As several central banks and securities depositories share technical platforms, costs and resources for development, operation and security can be shared among more parties. Sweden, as a small country with its own currency, cannot on its own achieve the same economies of scale that are offered by a system with a larger number of transactions. Platform sharing can also increase security, for instance, with regard to

protection against cyber threats. The next stage involves an in-depth analysis of how platform sharing could work in practice. In this work, the Riksbank will have a close dialogue with the participants in the Riksbank's payment system, RIX.

3.2 The position of cash as legal tender needs strengthening

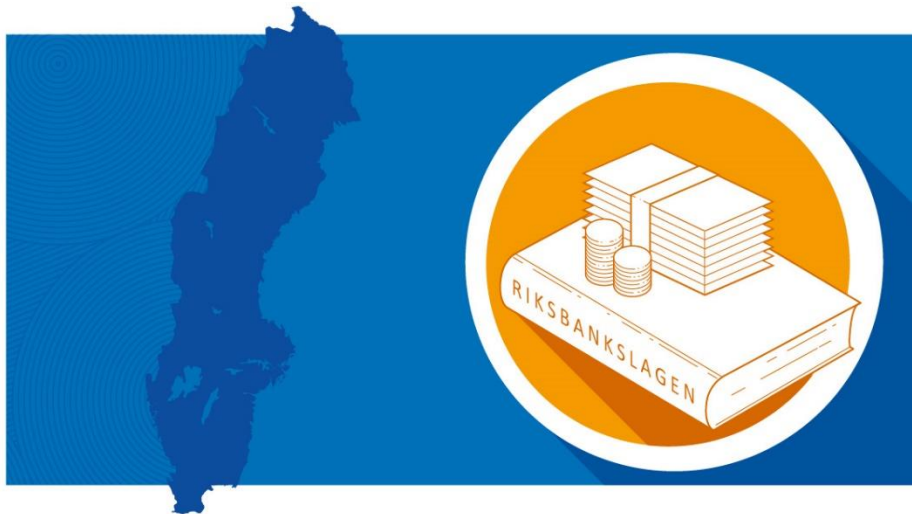
The Riksbank considers that the position of cash as legal tender needs to be strengthened. Those who need to use cash to manage their finances should be able to continue doing so. Cash also plays an important role in times of crisis and elevated preparedness. But ensuring the possibility of using cash, requires quick political decisions.



Parts of cash infrastructure secured

The Riksbank, politicians and other authorities share concerns that the development towards a cashless society entails problems and have therefore implemented a number of measures. In January 2021, for instance, a new act came into force that requires certain major banks to provide withdrawal services for private persons and to receive deposits from institutions and companies. The Riksbank has also implemented measures to be able to maintain its critical operations in the event of a crisis. During spring 2021, a cash handling office was opened in Jönköping and during 2022 another office will be opened in Falun. However, it is important to remember that cash is one of several payment alternatives that Sweden needs to have access to in the event of a crisis or elevated preparedness. Moreover, it is problematic to use cash in this type of situation if it is not also used in normal situations.

New Sveriges Riksbank Act clarifies the Riksbank's responsibility but does not give the necessary flexibility



The Riksbank's current responsibility for ensuring there is access to cash in society is clarified in the proposal for a new [Sveriges Riksbank Act](#). According to the proposal, the Riksbank will be responsible for ensuring that there are five cash depots, two of which will be at specific geographical places in the country (one in the county of Norrbotten or Västerbotten and one in Jämtland or Västernorrland county), where banknotes can be picked up and also handed in. The Riksbank has [pointed out](#) that the proposal to operate five cash depots is not appropriate, as there is a risk that the depots will not be used and will therefore contribute to unnecessary costs for society. The private actors with whom the Riksbank has had a dialogue over the year to discuss future cash management confirm that there is a risk that some depots may remain entirely unused. If the Riksbank is to be able to conduct the most efficient cash management possible, its mandate should be goal-oriented and not tied up in detailed regulations.

Further political decisions are required to safeguard the entire cash infrastructure and cash as a means of payment

The new legislation increases the requirements of the banks to supply cash services and the proposed depot responsibility contributes to safeguarding parts of the cash infrastructure. However, these measures are not enough to ensure the entire infrastructure or safeguard the possibility of paying in cash. [The act](#), that came into force in January only deals with private persons' possibilities to withdraw cash and companies' possibilities to deposit, and the proposed depot responsibility only safeguards the wholesale part of the cash supply chain. Further measures are needed to protect the groups that do not have access to digital payment possibilities or manual cash services, but who still need to use cash to manage their finances. Moreover, measures are also needed to ensure that necessary parts of the infrastructure are retained and can function.

If cash is to be used in the future, private persons' right to pay in cash needs to be protected. The Riksbank has [pointed out](#) that it should be possible to use cash to buy

goods and services essential to society and that this is best ensured by giving it stronger protection as legal tender (see *FACT BOX – The position of cash as legal tender*). Further, private persons need to have the possibility to exchange between digital money and cash. The Riksbank has [pointed out](#) that the banks need to give private persons the same possibilities to make deposits as have been legislated for withdrawals. It is particularly urgent to introduce measures to give the general public the opportunity to deposit coins in an account as there is at present very little opportunity to do so. Moreover, one needs to meet the needs of those who for various reasons need to use manual cash services to manage their personal finances.

FACT BOX – The position of cash as legal tender

According to the Sveriges Riksbank Act, banknotes and coins are so-called legal tender that households and companies must be able to use to make payments. However, there are substantial exceptions from the obligation to accept cash. Firstly, it is often possible to waive the obligation by agreement. This applies both in private enterprise and in such public sector operations that can be equated with private enterprise, for instance, municipal car parks. Secondly, there are exemptions in a number of acts, for instance, tax legislation, which means it is not possible to pay in cash. The obligation to accept cash is therefore relatively limited, and applies only in a few areas, for example, within the publicly-financed healthcare system. As households and companies cease using cash, it will become more and more difficult for those who need to pay in cash.

To ensure that the possibility to pay in cash can be maintained in various contexts, the Riksbank wants the position of cash as legal tender to be reinforced. By this, one means that more instances in society should be obliged to accept cash. The question of whether certain means of payment need to have the position of legal tender and the question of whether the content of the expression legal tender should be changed are currently being investigated as part of the so-called Payments inquiry (see *Digitalisation has raised the question of the state's role on the payment market*). The inquiry's remit also includes proposing potential legislative amendments or other measures.

3.3 Test of technical solution for an e-krona

The Riksbank has a pilot project to examine technical alternatives for a possible issue of the Swedish krona in digital form – an e-krona. A technical solution is now being tested with external participants. However, no decision has yet been made on issuing an e-krona.



E-krona access to state money in digital form

Today, the general public has access to Swedish krona in two forms – state issued money in the form of cash and digital money issued by the commercial banks. As cash is used less and less, there is a risk that the general public will in future no longer have access to, or be able to pay with, state-issued money. This is why the Riksbank is currently investigating the scope for issuing digital cash, a so-called [e-krona](#). No decision has yet been taken on whether an e-krona will be issued.

The Riksbank considers that an e-krona could contribute to strengthening the resilience of the payment system. It is important to have access to an alternative form of payment in the event of serious disruptions to the banks' or card companies' systems. An e-krona would fulfil the same task that cash has fulfilled so far – providing a public payment alternative that is available to all and that complements the supply of payment services from the private sector. By providing an e-krona and thereby an alternative infrastructure for payments, the Riksbank could also give other actors than banks direct access to a payment infrastructure where they can offer payment services to their customers. This makes it easier for smaller and newer actors to compete, which benefits innovation.

Providing the general public with central bank money in the form of banknotes and coins is an important part of the Riksbank's task of ensuring that Swedish payments are safe and efficient. Technological advances do not change this task. Cash quite

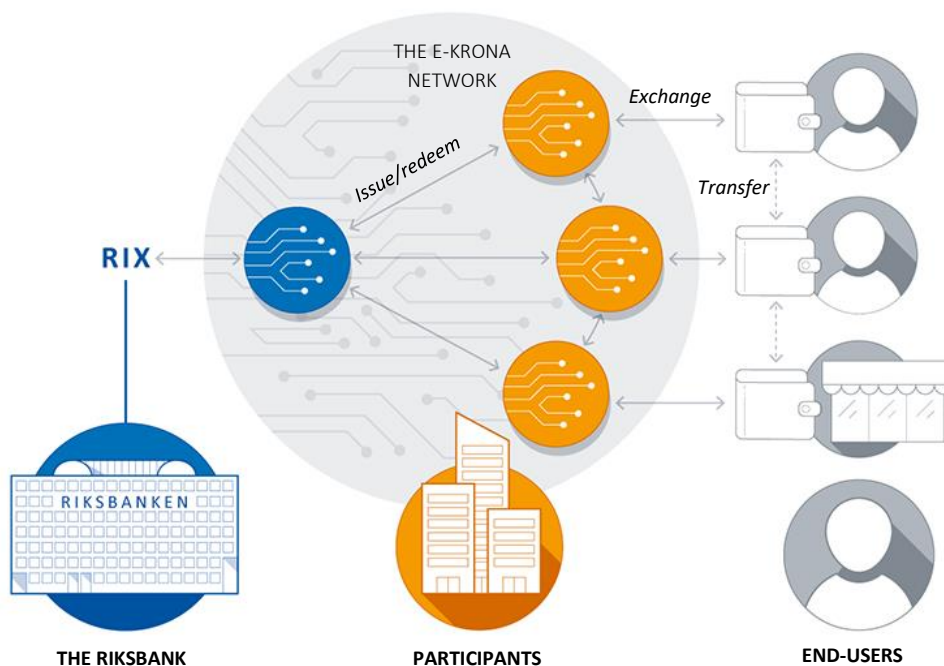
simply needs to be adapted to today's technology. The Riksbank therefore thinks that there may be reason to issue the Swedish krona digitally, in the form of an e-krona.

Technical solution for an e-krona tested with external participants

The Riksbank has been conducting a pilot project since 2020 together with the company Accenture, to produce a technical solution for an e-krona and in this way learn more about how such a solution could look like. By testing a technical solution, the Riksbank will be able to learn more about its possibilities, and also to use it as a basis for comparisons with other technical solutions and models.

The technical solution produced in the project is based on a type of Distributed Ledger Technology (DLT). It is based on a distribution model that is reminiscent of the model for today's cash. In the solution, the Riksbank creates e-kronas, which are then distributed to the general public via participants in the e-krona network, for example banks and payment service providers (see Figure 3).

Figure 3. Banks and payment service providers supply end-users with e-kronas



The Riksbank creates and destroys e-kronas. Participants in the e-krona network, for instance banks and payment service providers, can exchange e-kronas for money in their accounts in the Riksbank's payment system, RIX. The participants in their turn offer end-users the possibility to exchange e-kronas for money in a private bank account, for instance. The e-kronas can be stored in a digital wallet linked to, for instance, a mobile phone app or a card.

During [phase one](#) of the project, which ran from February 2020 to February 2021, a test environment was created to simulate how a payment with an e-krona could function. Here, simulated participants in the network could order e-kronas from the Riksbank that simulated end-users could buy and keep in a digital wallet. A mobile app

also enabled end-users to make payments, deposits and withdrawals. They could also make payments with cards and smart watches.

The evaluation of the first phase of the project shows that the technical solution tested in general lived up to the requirements that were made. However, Distributed Ledger Technology (DLT) is a new and in this context untried technology that requires further investigation so that we can find out whether it can manage the technical and legal requirements for an e-krona. To examine the solution tested during the first phase of the e-krona pilot in greater depth, the Riksbank chose to initiate phase two, which runs from February 2021 to February 2022.

During the second phase of the e-krona pilot, the Riksbank began a cooperation with Handelsbanken and TietoEVERY, who will act as participants in the test network built up during the first phase of the project and which is to be further developed during the second phase. A test together with external participants will give the Riksbank the opportunity to investigate in a more realistic manner and to learn more about how e-kronas can be distributed to end-users via payment service providers, such as banks. During phase two, the Riksbank will also look more closely at the performance of the technical solution.

The fact that the use of cash is declining in favour of digital means of payment also means that it will be more difficult to make a payment without an internet connection. Needing to be constantly connected to various payment networks to be able to make payments makes society vulnerable. One important task of the e-krona pilot is therefore to examine and test whether it is possible to make payments with an e-krona in situation where there is no internet connection.

3.4 The Riksbank is actively participating in the international cooperation

The development towards an increasing number of digital payments has received an extra push from the pandemic. At the same time, central banks and international organisations are addressing the fact that cross-border payments can still be expensive and slow. Central banks are therefore cooperating to improve cross-border payments and develop central bank digital currencies.



Central bank digital currencies are an important international issue

When a group of companies headed by Facebook launched the idea of creating their own currency in 2019, which was then called [Libra](#) but later changed name to Diem, central banks around the world took note. With Facebook's global network, this type of currency could spread rapidly and affect the central banks' capacity to conduct monetary policy and safeguard financial stability and a safe payment system.

Then came the pandemic and cash was increasingly abandoned in favour of cards and digital payments, even in countries where cash had previously had a relatively strong position. This meant that an increasing number of countries began to consider the effects of a cashless future and the need for central bank digital currencies. Moreover, the price of various crypto currencies soared to historical levels during the pandemic, which increased the need to consider the relationship between private and public money.

International collaboration on central bank digital currencies and cross-border payments

At the start of 2020, an [international working group](#) was formed on behalf of the central bank governors from a group of countries, including Sweden, to share lessons,

create a common stance and discuss the way forward with regard to central bank digital currencies that are accessible to the general public. The working group includes, apart from the Riksbank, also the European Central Bank (ECB) and the central banks of Canada, Japan, Switzerland, the United Kingdom and the United States. The group also collaborates with the BIS Innovation Hub. The G7 countries also began to discuss the issue of central bank digital currencies. In March 2021, an expert group was formed within the [G7](#), with the purpose of developing common principles for the design of central bank digital currencies. The Riksbank and the central bank in Switzerland were also asked to take part.

During 2020, the G20 countries initiated a plan to remedy some of the problems contributing to [cross-border payments](#) still sometimes being slow, expensive and complicated (see *Cross-border payments need to be faster and cheaper*). This resulted in a number of issues that were divided into [19 building blocks](#). The work aimed at making cross-border payments more efficient has been divided over a number of organisations. The Bank for International Settlements (BIS) Committee on Payments and Market Infrastructures (CPMI), which establishes international standards for the financial infrastructure, is responsible for several building blocks that aim to improve the existing payment systems. As a member of the CPMI, the Riksbank was given responsibility for heading up the work in the three building blocks known as “Future of Payments”, and examining how central bank digital currencies, the type of crypto currency known as stablecoins and new, innovated payment infrastructures can be used to simplify cross-border payments.

BIS has opened an innovation hub in Stockholm

In June 2021, the BIS established an [innovation centre](#) in Stockholm in collaboration with the central banks of Denmark, Iceland, Norway and Sweden. This Nordic Innovation Centre will focus on a more in-depth analysis of technological financial innovation relevant to central banks. It will function as a hub for a network of innovation experts, for research on important trends in financial technology of significance for central banks and for promoting international collaboration. The centre will also contribute to more in-depth knowledge in several areas relevant to central banks, such as central bank digital currencies, payment infrastructure, cyber security and financial sustainability.

Glossary

Application programming interface (API): Enables FinTech companies, for example, to connect to the banks' systems and collect customer account information from different banks or initiate a payment from a customer's bank account.

Bigtech: Major IT companies like Apple, Google, Facebook and Amazon that enable a large number of users to interact directly on a digital platform, such as e-Commerce, a search engine or social media.

Blockchain: A ledger or register of all transactions that have been carried out which cannot be altered or manipulated subsequently. The chain is created as transactions are verified/signed and added to previously executed transactions to create a new 'block'. Certain types of cryptocurrency, among others, use this way of recording transactions.

Card company: The legal entity that owns the regulatory framework and the product name for a card service. Some card companies are owned by banks and credit institutions (such as Visa and MasterCard), while others are independent companies (such as American Express and Diners).

Card scheme: A set of regulations, payment routines, payment instruments and associated infrastructure for card payments.

Credit card: A card that allows the holder to make payments to a certain total maximum amount during a given period. The payments are collected and invoiced to the cardholder at the end of the period, but the cardholder does not have to pay the full invoiced amount at the payment date. The part that the cardholder chooses not to pay is rolled over to the next period as a loan (credit) and usually the person then has to pay interest.

Clearing: Compilation and processing of payment instructions. Many transactions are generally handled at the same time (a so-called batch), which means that they can sometimes be offset against each other.

Clearing organisation: A company authorised by the supervisory authority (in Sweden, Finansinspektionen) to carry out clearing. In Sweden, Bankgirot is authorised to carry out clearing of retail payments.

Debit card: A card linked to the cardholder's account at a bank, from which the amount paid is directly debited when a payment is made.

Diem: A digital currency that a group of companies and organisations led by Facebook plan to launch. Diem was formerly called Libra.

Direct debit: A pre-authorised transfer from the paying party's account to the receiver's account. The receiver initiates the transfer.

Cash-in-transit company: A company that transports cash, particularly to banks and the trade sector. It can also manage the counting, sorting and authentication of cash at so-called counting centres.

Central bank digital currency (CBDC): Digital money created by central banks. “Retail CBDC” is intended for the public, while “wholesale CBDC” is intended for financial institutions

Cryptocurrency/cryptoasset: Digital currencies created in the private sector that are not backed by a state or central bank. Central banks generally refer to cryptocurrencies as cryptoassets because they usually do not fulfil the basic functions of money.

Digital currency: A currency that is created and stored electronically.

Economies of scale: Economic term for production in which the average cost decreases as production increases. Economies of scale normally occur when production is associated with large fixed costs.

E-Commerce: Purchases of goods or services over the Internet.

E-invoice: An invoice that is presented to the recipient in their online bank and that makes it easier for the customer to pay.

E-krona: A central bank digital currency that may be issued by the Riksbank and that would be available to the public (a so-called “retail CBDC”). The Riksbank has not taken any decision on issuing an e-krona. See also *central bank digital currency*.

E-Money Directive: The directive on electronic money (e-money) is an EU directive that regulates, among other things, the business operations in institutions for electronic money within the EU/EEA (e-money institutions) and other e-money issuers.

E-money institution: A Swedish limited liability company or economic association authorised under the Electronic Money Act to issue e-money. It may also be a legal entity within the EU/EEA that is authorised to issue e-money under national legislation.

EU/EEA: The European Union and the European Economic Area. The European Economic Area (EEA) is based on an agreement between all EU Member States, as well as Iceland, Lichtenstein and Norway, which mainly concerns free trade and the adaptation of legislation. Switzerland is not a member of the EEA, but has a similar agreement with the EU.

EU directive: Legislation included in EU law that determines the objectives to be achieved by Member States. An EU directive is legally binding but Member States are free to decide how to implement it in national law. In Sweden, directives are implemented through Swedish regulations.

EU regulation: Legislation included in EU law that is directly binding on Member States without having to be incorporated into Swedish law.

Finality Directive (directive concerning payment and securities settlement systems): Aims to prevent or minimise legal risks in settlement in the financial market. The directive ensures that transactions are carried out in the order in which they were submitted to the system and also that they are finally settled, regardless of whether any participant has become insolvent in the meantime. Among other things, the directive governs which participants can access designated settlement systems including central banks’ RTGS systems such as RIX in Sweden.

Financial infrastructure: The systems that, among other things, enable financial flows between different participants. The financial infrastructure also includes the regulations and procedures governing the use of the systems.

Fintech: A collective name for innovative financial technology companies. This type of company provides or enables financial services, for example by acting as an intermediary in part of the payment chain and by creating new services. They can also simplify or otherwise improve ways of paying.

Harmonisation: A process of creating some form of uniformity. In the area of payments, for example, this is a matter of countries agreeing to use the same messaging standard and rules, which helps make payments easy and quick.

Initiation: Starting a payment process. The initiation of a payment often involves checking the identity of the party initiating the payment, for example, by PIN or Bank-ID. This is followed by checking whether the person has the right to initiate the payment and whether there are sufficient funds in the account to make the payment.

Instant payment: A payment in which the payee's account receives the payment almost at the same time as the payer makes the payment. Swish is currently the only service offering instant payments in Sweden, but RIX-INST will make it possible for banks and other payment service providers to offer more types of service in which payment is made immediately.

ISO20022: New standard for payment orders that can help make international payments faster, more efficient and more transparent.

Know your customer (KYC): The statutory requirement for companies to have good knowledge of their customers and their customers' businesses. The aim is to impede and prevent the exploitation of a business for money laundering or terrorist financing.

Large-value payment: A payment, usually at a very high value, mainly made between banks or other participants in the financial market, which normally requires rapid settlement.

Manual cash services: The possibility of getting help to pay bills and deposit or withdraw cash over the counter, for example at a bank office.

Money laundering: When someone tries to get money that has been illegally obtained to appear legally acquired.

National currency: Money issued by a national authority, usually the central bank, which is legal tender in the nation, such as Swedish kronor in the form of banknotes and coins in Sweden and euro banknotes and coins in the euro area.

Online banking: A service provided by banks that allows their customers to bank over the Internet.

Payment: Transfer of money or a value in another form from one party to another.

Payment institution: A Swedish limited liability company or economic association authorised under the Payment Services Act to provide payment services. This may also be a legal entity domiciled in another EU/EEA country that, under that country's legislation, is authorised to provide payment services. See also the *Payment Services Directive* and *payment service provider*.

Payment instrument: The instrument or routine used to initiate a payment, such as a card.

Payment process: All of the stages a payment has to go through to be completed, such as initiation, clearing and settlement.

Payment service: A service that a payment service provider offers to its customers so that they can make payments, for example. See also *payment service provider*.

Payment Service Directive (PSD): The Payment Service Directive is a European directive that regulates payment services and payment service providers within the EU/EEA. The Payment Service Directive has been replaced by the EU Payment Service Directive 2 (PSD2). See also *PSD2*.

Payment service provider: A collective term that includes banks, credit market companies, payment institutions, registered payment service providers, institutions for electronic money, state agencies and municipal authorities, central banks and the foreign equivalents of these categories that provide payment services in Sweden.

PIN (Personal identification number): A personal number that is kept secret and that allows the user to identify themselves, for example when making a card purchase.

PSD2 (EU second Payment Services Directive): The PSD2 has replaced the PSD (Payment Services Directive). The aim of the Directive is to develop the market for electronic payments and create better conditions for secure and efficient payments. The PSD2 has been implemented into Swedish statutes through amendments to the Payment Services Act. This extended the scope of the law to include so-called third-party payment service providers.

QR code (Quick Response code): A two-dimensional code, unlike bar codes that are one-dimensional. QR codes can be used to identify the payer, the payment or the recipient of the payment. The code is read optically using an application on a mobile phone, tablet, computer or cash register.

Retail payment: A payment of lower value that is usually made between private individuals, companies and authorities. Traditionally, retail payments are defined as all payments that are not large-value payments. See also *large-value payment*.

RIX: The Riksbank's central payment system that processes large-value payments to and from the banks' accounts with the Riksbank. The Riksbank functions as the banks' bank for payments in Swedish kronor. In the spring of 2022, an instant payment service will be added (see *RIX-INST*).

RIX-INST: The Riksbank's service for instant payments, which will be launched in May 2022 and is part of the RIX system.

Settlement: When a payment is concluded, it is settled. For payments within a bank, this is when the transfer is made between accounts. For payments between banks, this is when the money has reached the receiving bank.

Solvency: Financial measure of a company's ability to fulfil its commitments. Also a measure of an insurance company's financial position that gauges the size of the companies' assets in relation to their debts, which mainly consist of their total commitments.

Stablecoin: A form of cryptoasset whose value is tied to the value of other assets, such as one or more national currencies or other financial assets. Stablecoins have mainly been used as a bridge between national currencies and investments in other cryptocurrencies.

SWIFT: A global network for financial messages that complies with certain standards. Central banks, banks and financial infrastructures use the SWIFT network and its format and standard to execute payments.

Swish: A payment service that allows users to send money from and receive money to their own bank accounts via their mobile phones. In order to be able to 'swish' money to each other, both the payer and the recipient need to be connected to the service, which is provided through their banks.

TIPS (Target Instant Payment Settlement): The Eurosystem's platform for instant payments that the Riksbank will use to offer instant payments through RIX-INST.



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